

WHAT IS CLAIMED IS

1. A system, comprising:

a first coder configured to receive at least one first data stream, and generate a plurality of data packets based on the received at least one first data stream, the plurality of data packets representing redundant data packets;

a second coder configured to receive the at least one first data stream and the redundant data packets, generate parity information for the received at least one first data stream and the redundant data packets, and output a second data stream comprising the at least one first data stream, the plurality of redundant packets and the parity information; and

logic configured to modulate the second data stream, and forward the modulated data.

2. The system of claim 1, further comprising:

a transmitter configured to receive the modulated data, and transmit the modulated data to a satellite.

3. The system of claim 1, wherein the first coder is configured to generate a first number of redundant data packets for each second number of payload data packets.

4. The system of claim 3, wherein the first number is four and the second number is 97.

5. The system of claim 1, further comprising:

an interleaver configured to receive video input data and output the at least one first data stream.

6. The system of claim 5, wherein the at least one first data stream comprises 12 data streams.

7. The system of claim 1, wherein the first coder comprises a plurality of coders, each of the plurality of coders configured to process a same bit in each received byte of the at least one first data stream.

8. The system of claim 7, wherein each of the plurality of coders comprises:
a buffer configured to store a block of data, the block of data representing the same bit in each byte of a data packet, and
logic configured to cyclically shift the contents of the buffer based on an index associated with the stored block of data, binary sum a first bit of the buffer with each other bit in the buffer, and output a plurality of bits based on the binary summing.

9. A device for processing data, comprising:
a receiver configured to receive video data, the video data including a payload portion including parity information and a redundant data portion;
a demodulator coupled to the receiver, the demodulator configured to demodulate the received video data;
a first decoder configured to decode the received data using a soft decoding process;
a second decoder configured to determine whether the payload portion contains an error; and
a third decoder configured to perform an error recovery procedure on the payload portion when the second decoder indicates that the payload portion contains an error.

10. The device of claim 9, wherein the receiver is configured to receive the video data over a wireless interface.

11. The device of claim 9, wherein the receiver is configured to receive the video data from a satellite.

12. The device of claim 9, wherein the soft decoding process comprises a Viterbi decoding process.

13. The device of claim 9, further comprising:
a deinterleaver configured to de-interleave data output from the first decoder and forward the de-interleaved data to the second decoder.

14. The device of claim 13, wherein the second decoder comprises a Reed-Solomon decoder, the Reed-Solomon decoder configured to decode each packet of data in the payload portion, and identify an error in a first packet included in the payload portion.

15. The device of claim 14, wherein the Reed-Solomon decoder is further configured to identify an index value associated with the first packet.

16. The device of claim 9, wherein the third decoder comprises:
a plurality of decoders, each of the plurality of decoders configured to process a block of data bits associated with the redundant data portion, and perform a cyclic shifting of the block of data bits based on an index of the erroneous packet.

17. The device of claim 16, wherein each of the plurality of decoders is further configured to perform a binary summing operation after the cyclic shifting.

18. A system for transmitting video data, comprising:
means for receiving a first data stream;
means for generating a plurality of redundant data packets based on the first data stream;
means for generating parity information for the first data stream and the redundant data packets;

means for forming data packets comprising the first data stream, the redundant data packets and the parity information;

means for modulating the data packets; and

means for transmitting the modulated data packets.

19. The system of claim 18, further comprising:

means for receiving the modulated data packets;

means for demodulating and decoding the modulated data packets;

means for re-encoding the decoded data packets; and

means for transmitting the re-encoded data packets.

20. The system of claim 19, further comprising:

means for receiving the re-encoded data packets;

means for decoding the re-encoded data packets;

means for determining that an error occurred in a first data packet;

means for generating an index value associated with the first data packet; and

means for recovering the first data packet using the index value.

21. A method for distributing data via radio frequency (RF) signals, comprising:

receiving a plurality of data packets;

generating parity information for each of the plurality of data packets;

generating a plurality of redundant packets based on the received data packets; and

forwarding the plurality of data packets, the parity information and the redundant data

packets to a distribution device via RF signals.

22. The method of claim 21, further comprising:

receiving, at the distribution device, the RF signals;

demodulating the RF signals;

decoding the demodulated RF signals to obtain decoded data;
re-encoding the data using at least two coding schemes; and
broadcasting the re-encoded data to a plurality of locations.

23. The method of claim 22, wherein the distribution device comprises a satellite and the plurality of redundant data packets increase an error correction capability at the plurality of locations.

24. The method of claim 21, wherein the redundant packets are processed by the distribution device in a same manner as the plurality of data packets.

25. A device configured to process data, comprising:
a receiver configured to receive data transmitted via a modulation scheme over an air interface; and
at least one logic device configured to demodulate the received data, perform a first decoding of the data, de-interleave the decoded data, perform a second decoding of the data, determine whether an error occurred based on the second decoding, and perform an error recovery operation when an error occurred, the error recovery procedure including a cyclic shifting operation.

26. The device of claim 25, wherein when performing the cyclic shifting, the at least one logic device is configured to cyclically shift a first predetermined number of bits by a number of bit positions based on an index value associated with a packet containing an error.

27. A device configured to receive data packets transmitted over an air interface, the device comprising:

a first decoder configured to decode the received data packets using a soft decoding procedure;

a second decoder configured to detect data packets with errors, identify a first data packet with an error as an erased packet, and assign an index value to the erased packet; and

a third decoder configured to recover the erased packet using the assigned index value and data packets successfully decoded by the first and second decoders.

28. The device of claim 27, wherein the data packets are transmitted in a payload portion of a data frame.

29. The device of claim 27, wherein the third decoder is configured to determine whether a number of data packets identified as erased packets within a group of data packets is less than a predetermined value, and recover the data packets identified as erased packets when the number of data packets identified as erased packets is less than the predetermined value.

30. The device of claim 29, wherein the third decoder is further configured to determine that a decoding failure occurred when the number of data packets identified as erased packets is more than the predetermined value.

31. The device of claim 29, wherein the group of data packets is identified based on delimiters included with the received data packets.

32. A device for decoding data, comprising:

a receiver for receiving a data stream;

a plurality of registers, each register corresponding to a surviving path associated with a plurality of trellis states; and

logic configured to reset contents of the plurality of registers to zero at a beginning of a boundary, update the contents of the plurality of registers based on a parity of the surviving path, and eliminate the surviving path with odd accumulated parity at an end of the boundary.

33. The device of claim 32, wherein the data stream represents an even parity data stream and the beginning of a boundary corresponds to the beginning of a byte of data.
34. The device of claim 33, wherein when eliminating the surviving path, the logic is configured to eliminate the surviving path at the end of the byte of data.
35. The device of claim 32, wherein when eliminating the surviving path, the logic is configured to set a metric of the surviving path to a minimum number.